

## ABSTRACT

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Silence description coding for multi-rate speech coding systems that employ discontinued transmission. Speech coding systems include multi-rate speech codecs having an encoder and a decoder. The silence description coding is performed in either the encoder or the decoder of the multi-rate speech codec. It may also be performed in a distributed manner wherein it is performed partially in the encoder and partially in the decoder. The silence description coding is performed on a speech signal having a substantially non-speech-like characteristic. Voice activity detection classifies the speech signal as being either substantially speech-like or substantially non-speech-like. The silence description coding is selected from a plurality of coding modes. In certain embodiments of the invention, the silence description coding is a source coding mode that operates at a bit rate that fits within a bit rate budget as determined by all of the available source coding modes within the plurality of coding modes. The silence description coding is also accompanied with signaling coding and channel coding of the speech signal. Error checking is performed using an unused portion of a bandwidth of the multi-rate speech codec's bit rate. This error checking involves majority voting in certain embodiments of the invention.